Attorney Docket: 5577-212

METHODS, SYSTEMS AND COMPUTER PROGRAM PRODUCTS FOR SUBSCRIBER CUSTOMIZED GENERATION OF PUBLICATIONS

Field of the Invention

The present invention relates to customized publications and more particularly to selection of content for such publications.

Background of the Invention

In advertising, it is considered highly desirable to target advertisements to the appropriate potential customer base, rather than to broadcast advertisements in general. Such targeted advertising has been developed extensively on the Internet for on-line advertising and, to a limited degree, for publications such as periodicals and newspapers.

For publications, it is known to provided different versions of a publication for different geographic distribution regions. For example, United States Patent No. 5,143,362 is directed to methods and apparatus for publication personalization where different versions of a publication are generated and then personalized address and identification information is printed on the publications. Different versions may include a different demographic form of the personalized signature with the form being

detectable during printing to facilitate linking the form to the address information. United States Patent Nos. 4,149,711, 5,114,128, 5,419,541 and 5,819,241 are also directed to assembling personalized publications.

In the Internet context, on-line advertisements conventionally appear on the top or bottom of a web page as a banner. When a user views a web page displaying a banner advertisement, the user may then try to find out more information regarding the advertisement (or the company providing the advertisement) by selecting the advertisement ("clicking through" on the banner ad) through the use of the mouse or other pointing device.

By tracking the viewing and buying patterns of on-line consumers, many on-line companies seek to determine the "right" advertisement to be displayed to each potential customer. Many on-line companies hope that, by tailoring advertising to individuals, they will increase the likelihood that a consumer will read and act upon the advertising.

Summary of the Invention

Embodiments of the present invention include methods, systems and computer program products which provide for subscriber based generation of a customized publication. A subscriber list is generated including identifications of a plurality of subscribers for the publication. The subscriber list is provided to a content provider and a designation of different selected content for two or more individual subscribers is received from the content provider. A first of the designated selected contents is associated with a first one of the subscribers based on the identification of the first subscriber. A second of the designated selected contents, different from the first, is

associated with a second of the subscribers different from the first subscriber based on the identification of the second subscriber. A first version of the publication is generated including the first selected content for the first subscriber and a second version of the publication is generated including the second selected content for the second subscriber.

In other embodiments of the present invention, the content provider is an advertiser and the first selected content and the second selected content are advertisements. The first version of the publication may be generated including the first selected content in a prescribed field of the publication for the first subscriber and the second version of the publication may be generated including the second selected content in the same prescribed field of the publication for the second subscriber.

In further embodiments of the present invention, operations include integrating content not designated by the content provider into the first version of the publication and the second version of the publication. The first version and the second version of the publication are printed and distributed to the associated ones of the subscribers.

In other embodiments of the present invention, a content provider receives at least a portion of the subscriber list. The content provider determines if any individually targeted content from the content provider is to be provided in the publication for ones of the subscribers. If any individually targeted content is to be provided in the publication for the subscribers, the content provider further obtains designations of content as the designations of the selected content for the associated subscribers based on the identifications of the subscribers. These

designations of content are transmitted as the designations of the selected content. The designation of content may be the selected content. Alternatively, the designations of content may comprise identifiers of information, for example, of information maintained by a printer of the publication, which identifiers may be transmitted to the printer of the publication.

In further embodiments of the present invention, determining if any individually targeted content from the content provider is to be provided further includes determining if any individually targeted content is to be provided based on individual profile information maintained by the content provider for the subscribers. The content provider may be an advertising distributor, in which case, the advertising distributor may determine if any individually targeted content from the content provider is to be provided by identifying target advertisers for ones of the subscribers based on the individual profile information for the respective ones of the subscribers. Designations of content associated with the identified target advertisers are obtained for the respective ones of the subscribers.

In yet other embodiments of the present invention, systems are provided for subscriber based generation of a customized publication. A subscriber list is provided including identifications of a plurality of subscribers for the publication. A profile data base is provided including profile information about ones of the plurality of subscribers. A content identification circuit associates different content with respective ones of the plurality of subscribers based on the identifications of the plurality of subscribers from the subscriber list and the profile information about the respective ones of the plurality of subscribers from the profile database. A print control circuit

operatively coupled to the content identification circuit generates versions of the publication for respective ones of the plurality of subscribers including associated different content for respective ones of the plurality of subscribers. A printer prints the generated versions of the publication responsive to the print control circuit.

The profile database may be associated with a content provider system remote from the content identification circuit, the print control circuit and the printer. The content provider system includes a determination circuit that determines if any individually targeted content is to be provided in the publication for respective ones of the plurality of subscribers and a content generation circuit that generates individualized content for respective ones of the plurality of subscribers. The content provider system may further include an output circuit that provides the generated individualized content to the content identification circuit.

While the invention has been described above primarily with respect to the method aspects of the invention, both systems and/or computer program products are also provided.

Brief Description of the Drawings

Figure 1 is a block diagram of an environment in which embodiments of the present invention are implemented;

Figure 2 is a block diagram of data processing systems according to embodiments of the present invention;

Figure 3 is a more detailed block diagram of data processing systems according to embodiments of the present invention;

Figure 4 is a flowchart illustrating operations according to embodiments of the present invention; and

Figure 5 is a flowchart illustrating operations according to embodiments the present invention.

Detailed Description of Preferred Embodiments

The present invention now will be described more fully hereinafter with reference to the accompanying drawings, in which preferred embodiments of the invention are shown. This invention may, however, be embodied in many different forms and should not be construed as limited to the embodiments set forth herein; rather, these embodiments are provided so that this disclosure will be thorough and complete, and will fully convey the scope of the invention to those skilled in the art.

As will be appreciated by one of skill in the art, the present invention may be embodied as a method, data processing system, or computer program product. Accordingly, the present invention may take the form of an entirely hardware embodiment, an entirely software embodiment or an embodiment combining software and hardware aspects all generally referred to herein as a "circuit." Furthermore, the present invention may take the form of a computer program product on a computer-usable storage medium having computer-usable program code means embodied in the medium. Any suitable computer readable medium may be utilized including hard disks, CD-ROMs, optical storage devices, a transmission media such as those supporting the Internet or an intranet, or magnetic storage devices.

Computer program code for carrying out operations of the present invention may be written in an object oriented programming language such as Java®, Smalltalk or C++. However, the computer program code for carrying out operations of the present invention may also be written in conventional procedural programming languages, such as the "C" programming language. The program code may execute entirely on the user's computer, partly on the user's computer, as a stand-alone software package, partly on the user's computer and partly on a remote computer or entirely on the remote computer. In the latter scenario, the remote computer may be connected to the user's computer through a local area network (LAN) or a wide area network (WAN), or the connection may be made to an external computer (for example, through the Internet using an Internet Service Provider).

The present invention is described below with reference to flowchart illustrations and/or block diagrams of methods, apparatus (systems) and computer program products according to embodiments of the invention. It will be understood that each block of the flowchart illustrations and/or block diagrams, and combinations of blocks in the flowchart illustrations and/or block diagrams, can be implemented by computer program instructions. These computer program instructions may be provided to a processor of a general purpose computer, special purpose computer, or other programmable data processing apparatus to produce a machine, such that the instructions, which execute via the processor of the computer or other programmable data processing apparatus, create means for implementing the functions specified in the flowchart and/or block diagram block or blocks.

These computer program instructions may also be stored in a computer-readable memory that can direct a computer or other programmable data processing apparatus to function in a particular manner, such that the instructions stored in the computer-readable memory produce an article of manufacture including instruction means which implement the function specified in the flowchart and/or block diagram block or blocks.

The computer program instructions may also be loaded onto a computer or other programmable data processing apparatus to cause a series of operational steps to be performed on the computer or other programmable apparatus to produce a computer implemented process such that the instructions which execute on the computer or other programmable apparatus provide steps for implementing the functions specified in the flowchart and/or block diagram block or blocks.

Referring first to the block diagram illustration of **Figure 1**, embodiments of the present invention implemented in an Internet protocol (IP) network environment will now be described. As illustrated in **Figure 1**, a content provider system **105**, operatively coupled to a profile database **108**, connects to the IP network **125** through a modem **118** or other communication means, such as a digital subscriber line, cable modem, network adaptor or the like. A publisher system **110** similarly connects to the IP network **125** through a modem **118** or other communication means. The publisher system **110** is operatively coupled to a printer **112**. The printer **112** may be a high volume printer configured for printing of customized publications in accordance with the teachings of the present invention. The customized publications generated by the printer **112**

are, in turn, distributed to associated ones of a plurality of subscribers **120**.

In various embodiments, the content provider is an advertiser or advertising distributor with information about various ones of the subscribers **120** maintained in the profile database **108** to facilitate targeted advertising. The publisher may be a publisher of a periodical, such as a magazine, newspaper or other printed publication having an associated subscriber list.

The IP network **125** may be used for transmission of subscriber list information from the publisher system **110** to the content provider system **105** and further for communication of targeted content from the content provider system **105** to the publisher system **110**. However, it is also to be understood that either of these information exchanges may be implemented by other means, such as generating printed documentation which may be shipped between the content provider and the publisher and, as necessary, keyed into the respective content provider system **105** and publisher system **110**.

The present invention will now be further described with reference to the block diagram of **Figure 2** which illustrates data processing systems according to embodiments of the present invention. As illustrated in **Figure 2**, the system **230** may include input device(s) **232** such as a keyboard or keypad, a display **234**, and a memory **236** that communicate with a processor **238**. The data processing system **230** may further include a storage system **242**, a speaker **244** and an I/O data port(s) **246** that also communicate with the processor **238**. The storage system **242** may include removable and/or fixed media such as floppy disks, ZIP drives, hard disks or the like as well as virtual

storage such as a RAMDISK. The I/O data port(s) **246** can be used to transfer information between the data processing system **230** and another computer system or a network (*e.g.*, the Internet). Such data processing systems may include, for example, personal computers, laptop computers, mainframe computers, pervasive computing devices such as personal digital assistants, smartphones or the like, or even embedded processing systems. The components of a particular data processing system may be conventional or custom components, such as those used in many conventional computing devices, which may be configured to operate as described herein.

Figure 3 is a block diagram of a data processing system that illustrates systems, methods, and computer program products in accordance with embodiments of the present invention. The processor **238** communicates with the memory **236** via an address/data bus **237**. The processor **238** can be a commercially available or custom microprocessor. The memory **236** is representative of the overall hierarchy of memory devices containing the software and data used to implement the functionality of the data processing system **230**. The memory **236** can include, but is not limited to, the following types of devices: cache, ROM, PROM, EPROM, EEPROM, flash memory, SRAM, and DRAM.

As shown in **Figure 3**, the memory **236** may contain several categories of software and data used in the data processing system **230**: the operating system **320**; the application program **340**; the input/output (I/O) device drivers **315**; and the data **310**. As will be appreciated by those of skill in the art, the operating system **320** may be any operating system suitable for use with a data processing system, such as OS/2, AIX or

OS/390 from International Business Machines Corporation, Armonk, NY, WindowsCE, WindowsNT, Windows95, Windows98 or Windows2000 from Microsoft Corporation, Redmond, WA, PalmOS from Palm, Inc., MacOS from Apple Computer, UNIX or Linux, proprietary operating systems or dedicated operating systems, for example, for embedded data processing systems.

The I/O device drivers **315** typically include software routines accessed through the operating system **320** by the application program **340** to communicate with devices such as the input devices **232**, the display **234**, the speaker **244**, the storage system **242**, the I/O data port(s) **246**, and certain memory **236** components. The application program **340** is illustrative of the programs that implement the various features of the data processing system **230**. Finally, the data **310** represents the static and dynamic data used by the application program **340**, operating system **320**, I/O device drivers **315**, and other software programs that may reside in the memory **236**.

As shown in **Figure 3** an embodiment of a publisher system **110** in accordance with the present invention includes a content identification circuit **335** and a print control circuit **330** in the application program **340**. In addition, the data **310** includes a profile database **345** and a subscriber list **350**. The subscriber list **350** includes identifications of a plurality of subscribers for the publication. The profile database includes profile information about ones of the plurality of subscribers. While the profile database **345** is illustrated in **Figure 3** as being associated with the publisher system **110**, it is to be understood that the profile database **345** may also be associated with a

data processing system associated with the content provider system **105** such as the profile database **108**. Furthermore, such profile information may be maintained by both the content provider and the publisher.

The content identification circuit **325**, as illustrated in **Figure 3**, associates different content with respective ones of the plurality of the subscribers. The association may be based on identifications of the individual ones of the plurality of subscribers from the subscriber list **350** and profile information about the respective ones of the plurality of subscribers from the profile database **345**. For example, a subscriber name may be used as an identifier in the subscriber list **350**. Alternatively, an alphanumeric identifier unique to an individual subscriber may be used as the identifying term in the subscriber list **350**.

The print control circuit **330** is operatively coupled to the content identification circuit **325** and generates versions of the publication for respective ones of the plurality of subscribers. Different associated content customized for respective ones of the subscribers is included in the respective versions for the individual subscribers. The output from the print control circuit **330** may then be provided to a printer **112** that prints the generated versions of the publication responsive to the print control circuit **330**. The interface to such an external printer may be provided by one of the I/O device drivers **315** operating through the I/O data ports **246** of the data processing system **230**.

For a data processing system **230** supporting a content provider system **105**, the application program **340** in various embodiments includes a determination

circuit and a content generation circuit. The determination circuit may determine if any individually targeted content is to be provided in the publication for respective ones of the subscribers in the subscriber list **350**. The content provider's content generation circuit may then generate individualized content for respective ones of the subscribers. The content provider system **105** preferably also has an output circuit, such as the I/O device drivers **315** through the I/O data ports **246** that provides the generated individualized content to the content identification circuit **325**. For example, the communications between the publisher and the content provider may be over the IP network **125** through the modems **118** as shown in the environment of **Figure 1**. However, the communications of subscriber lists and content information may, alternatively, be provided through hard copy print out information and transmission of such information which, in turn, may be keyed into respective data processing systems at the publisher **110** and content provider **105**.

Operations according to various embodiments of the present invention for subscriber based generation of a customized publication will now be further described with reference to the flowchart illustrations of **Figures 4** and **5**. Operations carried out by the publisher begin with reference to **Figure 4** at block **400** with generation of a subscriber list, including identifications of a plurality of subscribers for the publication. In various embodiments of the present invention, operations related to the content generation are provided by one or more content providers separate from the publisher as will be described with reference to blocks **405** and **410**. In such embodiments, at least a

portion of the subscriber list, including identifications of ones of the plurality of subscribers is provided to the content provider(s) by the publisher (block **405**). A designation of selected content for respective ones of the subscribers is received by the publisher from the content provider(s) (block **410**).

The content provider(s) may be an advertiser in which case the content information is typically advertisements targeted to specific individuals, for example, based on their buying preferences. Selected content for individual ones of the subscribers is associated with the respective subscribers based on the identification of the subscribers (block **415**). Based on individual subscriber identifications and the designation of content for the individual subscriber identifications from the content provider(s), the publisher associates customized, individualized content with ones of the individual subscribers.

The individualized information may be integrated with general content (not designated by the customized content) into various versions of the publication for respective ones of the individual subscribers (block **420**). Versions of the publication are generated including the customized individualized content for respective ones of the individual subscribers (block **425**). In various embodiments of the present invention, the customized individual content for each subscriber may be placed in a prescribed field of the publication. For example, a designated advertisement box integrated with articles or text of other interest associated with the theme of the publication may present a unique advertisement for different ones of the subscribers. Alternatively, the selected content may not be so constrained and may, for example, cause the overall

format of the publication in each respective version to vary based upon a variety of individualized content which is included for each subscriber.

The generated versions of the publication for respective ones of the individual subscribers are then printed (block **430**). Such individualized printing capabilities may be provided through known high volume printers such as the Infoprint 4000 available from International Business Machines Corporation (IBM). The respective printed versions of the publication are distributed to the associated subscribers (block **435**). For example, a magazine, newspaper or other periodical may be mailed, after printing, to the respective subscribers. Thus, targeted advertising or other customization of publications may be provided on an individual by individual level as contrasted with other version criteria, such as geographic region.

Operations with reference to the content provider system **105** will now be described for various embodiments of the present invention with reference to the flowchart illustration of **Figure 5**. At least a portion of the subscriber list **350** is received at the content provider (block **500**). The content provider determines if any individually targeted content from the content provider is to be provided to one or more of the subscribers identified in the subscriber list (block **505**).

In various embodiments of the present invention, operations further include identifying a source of content to be provided to individual ones of the subscribers (block **510**). For example, in embodiments of the present invention, the content provider is an advertising distributor who may obtain rights to advertising space in the publication and then sell

access to the space on behalf of individual advertisers based on subscriber criteria. In such an embodiment, operations related to identifying a source of customized content may include identifying one or more target advertisers for various ones of the subscribers based on profile information associated with the subscribers in the profile database **345**.

Designations of content for respective ones of the individual subscribers who have been determined to have individualized targeted content are obtained by the content provider (block **515**). The obtained designations of content may comprise the actual content to be included, or an identifier of information to be included. The identifier may be an identifier of information maintained, for example, by the publisher. Similarly, where the content provider is an advertising distributor and the content is associated with different target advertisers, operations in obtaining the individual content may include obtaining the content from respective identified target advertisers or from associated databases maintained by the content provider including associated content for respective target advertisers. The designation of content for respective subscribers is then transmitted, for example, to the publisher (block **520**).

Operations according to the present invention may be further understood in the context of control of advertisements by publishers. A publisher, for example, of a periodical, could make subscription lists available to their advertisers for purposes of allowing the advertiser to look up a consumer on the subscription list and customize content based upon information that the advertiser knows about the consumer. The information known about the consumer

could further be provided in part, or in total, to the advertiser by the publisher.

For example, if Amazon.com advertises in Business Week, then Business Week could, either in batch or in real time, ask Amazon.com for an advertisement to include in a version of Business Week sent to a subscriber "X." If Amazon.com has specific knowledge of subscriber X, then Amazon.com can suggest, for example, new books that are like old ones that subscriber X has previously purchased. Alternatively, Amazon.com could use various data mining techniques to suggest books in which subscriber X might be interested based on a variety of profile information related to subscriber X. This profile information could be provided by the publisher, third party information sources or maintained by the advertiser itself.

Individually customized content in accordance with the present invention for inclusion in a publication, such as a periodical, need not be limited to advertisements. For example, newspapers and/or magazines could utilize the present invention to print articles likely to be of the most interest to individual subscribers based on information known to the publisher, advertisers or other third parties to customize substantive content in the publication for individual subscribers. Such targeting publications may even provide for free publications to the subscribers where the subscribers have provided profile information that facilitates effective targeted marketing so as to allow the costs for generation and delivery of the publications to be absorbed by advertising revenues.

The flowcharts and block diagrams of **Figures 1** through **5** illustrate the architecture, functionality, and operation of possible implementations of systems,

methods and computer program products for subscriber based generation of a customized publication according to various embodiments of the present invention. In this regard, each block in the flow charts or block diagrams may represent a module, segment, or portion of code, which comprises one or more executable instructions for implementing the specified logical function(s). It should also be noted that, in some alternative implementations, the functions noted in the blocks may occur out of the order noted in the figures. For example, two blocks shown in succession may, in fact, be executed substantially concurrently, or the blocks may sometimes be executed in the reverse order, depending upon the functionality involved.

In the drawings and specification, there have been disclosed typical preferred embodiments of the invention and, although specific terms are employed, they are used in a generic and descriptive sense only and not for purposed of limitation, the scope of the invention being set forth in the following claims.